APPLICATIONS IN DISTRIBUTED QUANTUM COMPUTING NETWORKS

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Abstract

Within the last few years QKD in fibers has been demonstrated over distances ranging from 30 km and 48 km, respectively. In addition, it has also shown that QKD is possible when implemented in a conventional wavelength division multiplexed data transmission network. The performance numbers published with these two experiments make it possible to begin thinking about implementing QKD in the context of a local area network (LAN) or a Metropolitan Area Network (MAN). We are interested in extending the earlier work from a two node link to an n-node network. Starting with a simple 4-node network, this talk will discuss several applications where such a distributed quantum networks would be useful.

Biography

Deborah J. Jackson

Dr. Jackson holds a B.S. in Physics from MIT, and M.S. and Ph.D. in Physics from Stanford. Although her initial training was in nonlinear optics and atomic spectroscopy, she currently has over twenty years experience in laboratory research covering a wide range of topics in electromagnetic phenomena (radio frequency at 2.4 GHz frequencies to hard x-rays at 12 KeV) and solid state integrated optics device development. At JPL, she is putting her optics training to good use in the Quantum Computing Theory Group. Dr. Jackson has over 37 publications and two patents. In the past, she was the recipient of a Ford Fellowship and the Bell Labs CRFP Fellowship. She is also a member of Sigma Xi, the American Physical Society, the Optical Society of America, the New York Academy of Sciences, the National Society of Black Physicists, and a Senior Member of the IEEE.